Saskatchewan
Research Council

SASKATOON SRC
CLIMATOLOGICAL REFERENCE STATION
ANNUAL SUMMARY, 1984

by

E.E. Wheaton
R.M. Begrand

SRC Technical Report No. 166

Publication E-906-4-B-85

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Enquiries concerning the climatological reference station data and its measurement programs are welcome.

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ABSTRACT

Data concerning temperature, precipitation, soil temperature, evaporation, wind speed, bright sunshine and solar radiation at Saskatoon SRC ($52^{o}09'N$, $106^{o}36'W$, 497 m MSL) are presented for the calendar year 1984 and compared with the historic record.

The first four months of 1984 brought above normal temperatures and below normal precipitation. As a result, the snowpack was gone by the last week in February. This warmer pattern was interrupted in May when the temperature dropped slightly below normal, but the drier than normal conditions continued. The warm dry weather persisted from June to the end of August. The drought peaked during August as it was the warmest and one of the driest Augusts since 1892.

An abrupt change to cooler and much wetter than normal conditions was experienced in September. Fall was marked with an early onset of the snowpack accompanied by an almost month long succession of colder than normal days. Even though the wetter conditions lasted until November, the total precipitation at the end of the year was only 80.3% of normal.

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HISTORY AND STATION LOCATION

The first meteorological observations appear to have been taken at or near Saskatoon by the Royal Northwest Mounted Police in 1889. At first only temperatures were recorded. There were a number of changes made in the coordinates and as a result there is some disagreement in the early records as to the exact location of the weather observing point. The bulk of the evidence, however, indicates that the location was 52 degrees 15 minutes north and 106 degrees 20 minutes west, elevation 480 m above sea level. This would place it at Clark's Crossing, on the South Saskatchewan River, approximately 10 miles north and east of the center of the present City of Saskatoon. At that time there was a settlement at Clark's Crossing and also about 10 or 15 families on either side of the river at Saskatoon.

Not too much is known about the early observers. However, the records show that a Major T.H. Keenan took the observations from March, 1892 until March, 1895. Mr. George Will was the observer from January, 1897 until April, 1897. It is thought that Thomas H. Copeland was involved in the observational program from 1895 to May 1, 1901, at which time it was taken over by Mr. Eby, senior. Continuous observations were taken by the Eby's at a site on 8th Street until October 31, 1942, when the station was closed. Mr. Eby continued the program until his death in 1921. His daughter, Miss E.S. Eby, recorded the observations until April, 1931 and was replaced by her brother, J.M. Eby, who continued the program until the station was closed. The Eby station recorded temperature, precipitation and weather notes on fog, thunderstorms, winds and any unusual weather phenomena. Reports were made twice daily, morning and evening.

In 1916 a climatological station was established by the Physics Department of the University of Saskatchewan and continuous observations were kept twice daily until January 15, 1965. The long time observer at this site was Mr. Sidney Cox. The Saskatchewan Research Council took over the program in the fall of 1963 at our newly established Climatological Reference Station.

The location of the Saskatchewan Research Council's Climatological Reference Station is latitude 52°09'N and longitude 106°36'W and the elevation is 497 m above mean sea level*. The long time observer (16 years) at this present site was Mr. Joe Calvert, who retired from the program in August, 1983.

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*From various sources including the Physical Environment of Saskatoon, Canada (E.A. Christiansen ed.) and 1974 Annual Meteorological Summary, Saskatoon, Saskatchewan, Environment Canada, Atmospheric Environment Service.

FOOTNOTES TO CLIMATIC TABLES

1 The quantities recorded in this column are defined as the element value for the reported year minus the element value for the previous year. The 1984 Mean Annual Temperature was 3.1°C while the 1983 Mean Annual Temperature was 2.1°C, giving a difference of 1.0°C (see Table 1). In 1984 there were 210 Days with Frost, three more days than for 1983.

2 In climatology it is often useful to make spatial comparisons of particular element values over a common time period. At an interior continental site such as Saskatoon, a period of 30 years is required to produce statistically stable estimates of the more variable elements. To facilitate spatial comparisons, World Meteorological Organization currently recommends the standard period January 1, 1951 to December 31, 1980 for data analysis. Items in this column conform to this standard, except where noted. Extreme values in this column are the extremes recorded in the standard period.

3 Temporal comparisons at a point are also of value in some types of climatic studies. Therefore it is desirable to produce the maximum length of reliable climatic record to carry out studies over a period of time. Data in this column are drawn from the following data sets:

Saskatoon SRC	1964 to 1983
Saskatoon U. of S.	1916 to 1963
Saskatoon	1892 to 1915

Station locations, exposures and measurement procedures were subject to change during this time period. Data presented in this column are unadjusted and users are cautioned accordingly.

4 The Mean Annual Temperature is defined as the average of the Daily Mean Temperatures for one year. In the monthly summaries (Tables 2 to 13) the Daily Mean Temperature reported is the average of the Daily Mean Temperatures for one month under consideration. In turn, the Daily Mean Temperature for a particular day is defined as the arithmetic mean of the Daily Maximum Temperature and the Daily Minimum Temperature for the date. The Normal records used for comparison purposes are those published in Volume Two of the Atmospheric Environment Service publication "Canadian Climate Normals, 1951-1980, Temperature".

5 The Mean Maximum Temperature tabulated is the mean of the Daily Maximum Temperatures for one year in the case of Table 1 and for particular months in the cases of Tables 2 to 13. For details concerning measurement procedures, the reader is referred to the Atmospheric Enviornment Service publication Manual of Climatological Observations, second edition, January, 1978. The normal values are published in the Volume Two of the Canadian Climate Normals (note 4).

6 The Mean Minimum Temperature as tabulated is defined as the mean of the Daily Minimum Temperatures averaged over the appropriate time periods. Refer to note 5 above converning measurement procedures and normals.

7 The word Extreme refers to the highest or lowest value of a particular element recorded during the period in question. The highest temperature recorded at Saskatoon SRC during 1984 was 38.5°C while the highest value ever recorded at Saskatoon was 40.0°C (see Table 1).

8 A Day with Frost is recorded on each occasion when the Daily Minimum Temperature is equal to or less than 0°C.

9 A Heating Degree-Day (HDD) is an index of the heating requirement to achieve a stipulated comfort value in an indoor environment. For most purposes, a temperature of less than 18°C is considered uncomfortable and supplementary heating is required. On a specific day, the amount by which 18°C exceeds the Daily Mean Temperature defines the number of Heating Degree-Days for that day. Mathematically:

$$HDD = (18^{\circ}C - \overline{T}), \text{ for that day,}$$
where $\overline{T}$ = Daily Mean Temperature in °C
If $\overline{T}$ is equal to or greater than 18°C, HDD = 0.

Monthly and annual values of HDD are obtained by summing daily values. The normal used for comparison purposes is the adjusted normal published in the Atmospheric Environment Service publication Volume Four of the "Canadian Climate Normals, 1951-1980, Degree Days". The procedure used to adjust the means for stations with five to nineteen years of data is indicated in this volume. An adjustment is required to make the mean comparable to the thirty year normal.

10 In order for plant growth to proceed, air temperature must exceed a critical value appropriate to the plant species in question. For many members of the grass family, including most commercial cereals grown on the prairies, a base temperature of 5.0°C has been established. On a specified day, the difference between the Daily Mean Temperature and the 5.0°C base temperature defines the number of Growing Degree-Days (GDD). Mathematically:

$$GDD = (\overline{T} - 5.0^{\circ}C), \text{ for that day,}$$
where $\overline{T}$ = Daily Mean Temperature in °C
If $\overline{T}$ is equal to or less than 5.0°C, GDD = 0.

Daily GDD values are summed to provide totals for the appropriate month, growing season or year. The normal value used for comparison is given in the Volume Four of the "Canadian Climate Normals, 1951-1980, Degree Days".

11 Total precipitation is the sum of the daily rainfall and daily snowfall amounts recorded. The snowfall component of precipitation is recorded as an equivalent amount of liquid water. For particulars on precipitation measurement procedures and instruments, the reader is referred to the Atmospheric Environment Service publication Manual of Climatological Observations, second edition, January, 1978. The notation T in this column refers to a trace of precipitation (less than 0.2 mm water equivalent). The normal records used for comparison purposes are those published in Volume Three of the Atmospheric Environment Service publication "Canadian Climate Normals, Precipitation, 1951-1980".

12 Note that prior to 1960, measurement of snowfall was accomplished using snow rulers set vertically in the ground to obtain the thickness of the newly deposited layer. In obtaining precipitation values a standard water equivalent of one inch of snow yielding one-tenth inch of water was assumed. Since these measurements were inaccurate due to snow drifting, compaction and varying water equivalent, the Nipher snow gauge which actually catches snow has been employed at a number of stations (including Saskatoon) in more recent years.

13 A Precipitation Day is recorded on occasions when the amount of precipitation in a 24-hour period equals or exceeds 0.2 mm water (0.01 inch in English units). If both rain and snow occur on the same day, a snow day, a rain day and a precipitation day are all recorded. If only one form of precipitation occurs on a specified date, a precipitation day, a rain day or a snow day are recorded appropriately. Beginning in 1974, observations at Saskatoon SRC refer to the Calendar day. Previous to 1974, the so-called climatological day, beginning at 9 a.m. standard time on the date of reference and ending at 9 a.m. the next morning, was employed in record-keeping. An asterisk (*) appearing in the Normal column denotes the occurrence of measureable precipitation on one or more occasions but the 30-year mean when calculated amounts to less than a trace.

14 Evaporation measurements are carried out in the period May 1 to September 30 only, using the International Hydrological Decade class A pan. The data reported is the sum of the daily net evaporation. Particulars of the measurement procedure are contained in the Atmospheric Environment Service publication Evaporation, May, 1978. The data base available for comparison is the Saskatoon SRC record for the period 1964 to 1983. The notation M refers to missing data.

15 The Mean Wind Speed value reported is the mean of the hourly wind speeds for the period in question. Average hourly wind speeds are obtained from recording instruments. The anemometer employed is a propeller-type aerofoil at a height of 10 m. Normals used for comparison purposes are those of Saskatoon Airport, from the Atmospheric Environment Service publication Canadian Normals, Volume 5, Wind 1951-1980.

16 Peak Gust refers to the highest instantaneous value recorded by the anemometer system for the period of reference, irrespective of direction and/or duration. Comparison is again with published data for Saskatoon Airport.

17 Total Bright Sunshine is the sum of the daily bright sunshine values in hours and tenths of hours as recorded by a Campbell-Stokes sunshine recorder. Atmospheric Environment Service publication, Bright Sunshine, 1951-1980, Volume 7 supplies information on measurement procedures and normals respectively.

18 Percent Possible Sunshine Hours refers to the ratio of measured bright sunshine hours to total possible daylight hours in a given period, expressed as a percentage.

19 Total Global Solar Radiation is the sum of the daily values of short wave solar radiation recorded during the period in question. Measurements are carried out on a horizontal surface at the ground and integrated over the whole celestial dome, summing the diffuse and direct components of the solar beam. The measuring instrument is a temperature-compensated Eppley pyranometer. The unit of measurement quoted, the Langley, is defined as one calorie per square centimetre. Comparison is with a provisional Normal based on five years of data. Diffuse Solar Radiation is also recorded (Table 26). The instrument used is an Eppley pyranometer with a shade ring.

20 The Year/Day entry appearing in Tables 2 to 13 refers to the year and day on which an extreme event occurred. Reference to the month appears in the table heading. For example, referring to Table 2, the warmest day in January, 1984 was the 4th with a high temperature of 6.5°C while the warmest January day on record was January 30, 1931 with a high temperature of 10.0°C.

21 Due to missing observations, faulty instrument calibration, lost records, etc., only partial data are available from the period 1892 to 1979, particularly in the period prior to 1915. The number of years of useful record is therefore cited.

22 Soil Temperature, under a short grass surface of which normal snow accumulation occurs in winter, is measured according to procedures outlined in the Atmospheric Environment Service publication Soil Temperature, January 1, 1976. If the observed soil temperature at any depth is equal to or less than 0°C on any occasion during the reference period, the question is answered Yes.

23 Depths below surface at which soil temperature measurements are made are: 5 cm, 10 cm, 20 cm, 50 cm, 100 cm, 150 cm and 300 cm. Since soil temperature is affected by profile structure and water content, extrapolation of the measured data is difficult.

Table 1. Annual Climatic Summary, Saskatoon SRC, 1984.

Element	1984 Value	Difference From 1983[1]	Difference From Normal[2]	Difference All Years[3]
Mean Annual Temperature[4] (°C)	3.1	1.0	1.3	
Mean Maximum Temperature[5] (°C)	8.8	1.2	1.3	
Mean Minimum Temperature[6] (°C)	-2.5	0.8	1.5	
Extreme Maximum Temperature[7] (°C)	38.5 (July)	2.0 (Aug.)		-1.5
Extreme Minimum Temperature[7] (°C)	-38.0 (Dec.)	1.5 (Dec.)		12.0
Days with Frost[8]	210	3	11	
Heating Degree-Days[9] (18°C base)	5703	-201	326	
Growing Degree-Days[10] (5°C base)	1782	144	146	
Total Precipitation[11] (mm)	297.5	-174.1	-73.0	
Total Rainfall[11] (mm)	170.5	-158.7	-72.5	
Total Snowfall[12] (cm)	127.0	-15.4	9.0	
Greatest 24-hr Precipitation (mm)	36.7 (Oct.)	-62.7 (June)		-62.7
Greatest 24-hr Rainfall (mm)	18.6 (Sept.)	-80.8 (June)		-80.8
Greatest 24-hr Snowfall (cm)	36.7 (Oct.)	10.5 (May)		4.7
Precipitation Days[13]	88	-44	-28	
Rainfall Days[13]	49	-25	-10	
Snowfall Days[13]	42	-23	-20	
Total Evaporation[14] (mm)	1179	220	203	
Mean Wind Speed[15] (km/hr)	14.7	0.8	-2.8	
Peak Wind Gust[16] (km/hr)	87	-4(June)	-64	
Total Bright Sunshine[17] (hr)	2318	127	-132	
Total Global Radiation[19] (Langleys)	106508	-2115	10123	

LOCATION: 52°09'N, 106°36'W, 497 m MSL

Table 2. SASKATCHEWAN RESEARCH COUNCIL
MONTHLY WEATHER SUMMARY FOR January, 1984

Element	1984 Value	1983 Value	Normal Value[2] 1951-1980	Extreme All Years[3]
Monthly Mean Temperature[4] (°C)	-12.1	-13.0	-19.1	
Monthly Mean Maximum Temperature[5] (°C)	-6.5	-8.0	-14.2	
Monthly Mean Minimum Temperature[6] (°C)	-17.6	-18.0	-23.9	
Extreme Maximum Temperature[7] (°C)	6.5	0.0	6.1	10.0
Year/Day(s)[20]	1984/4	1983/9-12	--	1931/30
Years of Record[21]	1	1	17	86
Extreme Minimum Temperature[7] (°C)	-31.5	-37.5	-43.9	-48.9
Year/Day(s)[20]	1984/14,19,20	1983/25	--	1893/31
Years of Record[21]	1	1	17	86
Days with Frost[8]	31	31	31	
Heating Degree-Days[9] (18°C base)	946.0	955.5	1149.4	
Growing Degree-Days[10] (5°C base)	0.0	0.0	0.0	
Total Precipitation[11] (mm)	8.6	13.7	22.6	
Total Rainfall[11] (mm)	1.3	T	0.1	
Total Snowfall[12] (cm)	7.3	13.7	21.2	
Greatest 24-hour Precipitation (mm)	2.8	3.2	12.4	30.5
Year/Day(s)[20]	1984/26	1983/23	--	1893/23
Years of Record[21]	1	1	17	86
Greatest 24-hour Rainfall (mm)	0.8	T	1.8	2.0
Year/Day(s)[20]	1984/26	1983/22,31	--	1947/10
Years of Record[21]	1	1	17	86
Greatest 24-hour Snowfall (cm)	2.2	3.2	12.4	30.5
Year/Day(s)[20]	1984/11	1983/23	--	1893/23
Years of Record[21]	1	1	17	86
Precipitation Days[13]	7	12	13	9
Rainfall Days[13]	2	T	*	1
Snowfall Days[13]	6	12	13	9
Total Evaporation[14] (mm)	M	M	May - September only	
Mean Wind Speed[15] (km/hr)	14.3	11.7	16.8	
Peak Gust Speed[16]	79.0	60.0	97.0	
Total Bright Sunshine[17] (hr)	123.6	78.8	103	
Percent Possible Bright Sunshine[18]	48	31	40	
Total Global Radiation[19] (Langleys)	2094	2775	3168	
Soil Frozen?[22]	YES	YES	YES	
Frozen Levels[23] (cm)	5,10,20, 50,100	5,10,20 50,100	5-100	

SUMMARY:

January has been an extremely pleasant month with milder than normal temperatures and very little precipitation.

Mean daily temperatures have been above normal for 21 days this month, with the mean monthly temperature of -12.1°C being 7.0°C greater than the 1951-1980 normal. The New Year began in an acceptable manner when daily maximum temperatures exceeded the daily mean as well as the all time records for three consecutive days (January 2, 3, 4).

The total precipitation of 8.6 mm falls well below the 30 year normal by approximately 14 mm. The total rainfall of 1.3 mm, although negligible, is much greater (by 1.2 mm) than the 1951-1980 normal rainfall for January. Despite the above normal temperatures, the rainfall received on the 4th and 26th made it extremely hazardous for drivers and pedestrians.

The reasonable temperatures, the lack of severe snowstorms in combination with approximately 22% more sunshine and 15% less wind than normal, has made the first winter month of 1984 very easy to endure.

SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'N 106°36'W 497 m MSL
MONTHLY WEATHER SUMMARY
FEBRUARY, 1984

Table 3.

Element	1984 Value	1983 Value	Normal Value[2] 1951-1980	Extreme All Years[3]
Monthly Mean Temperature[4] (°C)	-3.9	-10.0	-14.5	
Monthly Mean Maximum Temperature[5] (°C)	0.5	-6.0	-9.3	
Monthly Mean Minimum Temperature[6] (°C)	-8.3	-14.0	-19.7	
Extreme Maximum Temperature[7] (°C)	4.5	5.5	6.1	12.8
Year/Day(s)[20]	1984/20	1983/25	--	1931/19
Years of Record[21]	1	1	17	88
Extreme Minimum Temperature[7] (°C)	-21.5	-25.5	-41.1	-50.0
Year/Day(s)[20]	1984/4	1983/3	--	1893/1
Years of Record[21]	1	1	17	88
Days with Frost[8]	29	28	28	
Heating Degree-Days[9] (18°C base)	637.5	782	920.4	
Growing Degree-Days[10] (5°C base)	0.0	0.0	0.0	
Total Precipitation[11] (mm)	2.5	12.6	21.9	
Total Rainfall[11] (mm)	T	T	0.4	
Total Snowfall[12] (cm)	2.5	12.6	18.5	
Greatest 24-hour Precipitation (mm)	1.5	7.1	14.2	20.3
Year/Day(s)[20]	1984/29	1983/27	--	1918/7
Years of Record[21]	1	1	17	87
Greatest 24-hour Rainfall (mm)	T	T	1.8	8.1
Year/Day(s)[20]	1984/14	1983/10	--	1953/3
Years of Record[21]	1	1	17	87
Greatest 24-hour Snowfall (cm)	1.5	7.1	14.2	20.3
Year/Day(s)[20]	1984/29	1983/27	--	1918/7
Years of Record[21]	1	1	17	87
Precipitation Days[13]	2	12	11	
Rainfall Days[13]	-	0	*	
Snowfall Days[13]	2	12	10	
Total Evaporation[14] (mm)	M	M	M	
Mean Wind Speed[15] (km/hr)	13.4	14.4	16.4	
Peak Gust Speed[16]	59.0	58.0	85.0	
Total Bright Sunshine[17] (hr)	154.3	58.0	135.1	
Percent Possible Bright Sunshine[18]	56.3	21.0	49.0	
Total Global Radiation[19] (Langleys)	5018	4137	5566	
Soil Frozen?[22]	YES	YES	YES	
Frozen Levels[23] (cm)	5,10,20, 50,100	5 to 100	5 to 100	

SUMMARY:

With the exception of a cold period during December, 1983, winter thus far has been very mild.

Mean daily temperature for this February of -3.9°C surpasses the normal value of -14.5°C by 10.6°C. Mean temperatures have been above normal for the entire month, with daily maximum temperatures climbing above 0°C for 18 days. As of February 29, the warm spell (days with above normal temperatures) has lasted 39 consecutive days.

Above normal temperatures are reflected as well by the recording of 30% fewer heating degree days than normal. February has also been slightly brighter with approximately 14% more sunshine than the 30 year normal.

Precipitation received this month has fallen far below the 1951-1980 normal by 19.4 mm. The Climate Reference Station recorded a trace of rainfall, and only 2.5 cm of snowfall. In combination with warm temperatures snow depths have diminished to zero in many areas.

Although the mild conditions we have experienced so far provide a welcome relief from normally colder and more severe winters, the above normal temperatures and below normal precipitation might be signalling less favourable conditions for agriculture this spring.

SASKATCHEWAN RESEARCH COUNCIL

CLIMATE REFERENCE STATION

LOCATION: 52°09'N 106°36'W 497 m MSL

MONTHLY WEATHER SUMMARY

Table 4. MARCH, 1984

Element	1984 Value	1983 Value	Normal Value[2] 1951-1980	Extreme All Years[3]
Monthly Mean Temperature[4] (°C)	-5.5	-7.0	-8.5	
Monthly Mean Maximum Temperature[5] (°C)	-1.2	-3.0	-3.5	
Monthly Mean Minimum Temperature[6] (°C)	-9.7	-10.5	-13.6	
Extreme Maximum Temperature[7] (°C)	11.5	6.5	15.0	22.8
Year/Day(s)[20]	1984/23	1983/11	--	1910/23
Years of Record[21]	1	1	17	88
Extreme Minimum Temperature[7] (°C)	-22.0	-23.0	-38.1	-43.3
Year/Day(s)[20]	1984/8,14	1983/19	--	1897/14
Years of Record[21]	1	1	17	88
Days with Frost[8]	31	31	31	
Heating Degree-Days[9] (18°C base)	728	775	826	
Growing Degree-Days[10] (5°C base)	0.0	0.0	0.9	
Total Precipitation[11] (mm)	11.5	30.1	22.3	
Total Rainfall[11] (mm)	2.2	2.8	1.1	
Total Snowfall[12] (cm)	9.3	27.3	19.5	
Greatest 24-hour Precipitation (mm)	3.0	8.8	32.0	32.0
Year/Day(s)[20]	1984/13	1983/1	--	1967/30
Years of Record[21]	1	1	17	87
Greatest 24-hour Rainfall (mm)	2.2	1.0	7.1	7.4
Year/Day(s)[20]	1984/24	1983/12	--	1938/28
Years of Record[21]	1	1	17	87
Greatest 24-hour Snowfall (cm)	3.0	8.8	32.0	32.0
Year/Day(s)[20]	1984/13	1983/1	--	1967/30
Years of Record[21]	1	1	17	88
Precipitation Days[13]	6	16	10	
Rainfall Days[13]	1	6	1	
Snowfall Days[13]	5	14	10	
Total Evaporation[14] (mm)	M	M	(May-Sept.)	
Mean Wind Speed[15] (km/hr)	12.8	16.5	17.5	
Peak Gust Speed[16]	80.0	67.0	93.0	
Total Bright Sunshine[17] (hr)	119.8	103.0	190.0	
Percent Possible Bright Sunshine[18]	33	28	52	
Total Global Radiation[19] (Langleys)	7187	8460	10,105	
Soil Frozen?[22]	YES	YES	YES	
Frozen Levels[23] (cm)	5 to 100	5 to 100	5 to 100	

SUMMARY:

With the exception of ten days during the middle of March with below normal temperatures, the remainder of the month has been very pleasant. The mean temperature of -5.5°C surpasses the 1951-80 normal by 3.0°C. March 6 marks the last day of a warm spell (days with above normal temperatures) which lasted for 45 consecutive days (January 22, 1984 - March 6, 1984).

The milder temperatures have reduced the number of heating degree days recorded this month by 12% as compared to the normal, while we experienced only 63% of the normal sunshine hours.

Precipitation recorded at CRS this month was 11.5 mm which is approximately one half of the normal precipitation received for this month. In addition, 2.2 mm of the total was received in the form of rainfall recorded on the 24th. Snow depths during the month have ranged from a trace to a maximum of 2 cm. With the mild temperatures all traces of snow cover have melted.

As of the end of March, 1984, CRS has recorded 22.6 mm of precipitation which is substantially less than the normal of 66.8 mm received for the same period (January-March). Below average precipitation continues to signal drier than normal conditions for agriculture this spring.

SASKATCHEWAN RESEARCH COUNCIL

CLIMATE REFERENCE STATION

LOCATION: 52°09'N 106°36'W 497 m MSL

MONTHLY WEATHER SUMMARY

APRIL, 1984

Table 5.

Element	1984 Value	1983 Value	Normal Value[2] 1951-1980	Extreme All Years[3]
Monthly Mean Temperature[4] (°C)	7.4	3.0	3.4	
Monthly Mean Maximum Temperature[5] (°C)	14.6	8.5	9.0	
Monthly Mean Minimum Temperature[6] (°C)	0.1	-2.5	-2.3	
Extreme Maximum Temperature[7] (°C)	25.5	22.5	30.6	33.0
Year/Day(s)[20]	1984/17	1983/24	--	1952/28
Years of Record[21]	1	1	17	37
Extreme Minimum Temperature[7] (°C)	-6.0	-18.0	-27.8	-28.3
Year/Day(s)[20]	1984/26,30	1983/12	--	1893/1954
Years of Record[21]	1	1	17	87
Days with Frost[8]	17	22	22	
Heating Degree-Days[9] (18°C base)	316.5	451	440	
Growing Degree-Days[10] (5°C base)	98.0	52	47	
Total Precipitation[11] (mm)	15.6	41.7	21.4	
Total Rainfall[11] (mm)	9.4	10.0	10.7	
Total Snowfall[12] (cm)	6.2	31.7	10.0	
Greatest 24-hour Precipitation (mm)	7.2	18.7	19.3	30.2
Year/Day(s)[20]	1984/7	1983/10	--	1955/19
Years of Record[21]	1	1	17	87
Greatest 24-hour Rainfall (mm)	7.2	9.8	11.7	26.7
Year/Day(s)[20]	1984/7	1983/25	--	1926/23
Years of Record[21]	1	1	17	87
Greatest 24-hour Snowfall (cm)	6.2	18.5	18.0	20.3
Year/Day(s)[20]	1984/25	1983/10	--	1942/5
Years of Record[21]	1	1	17	87
Precipitation Days[13]	6	6	7	
Rainfall Days[13]	5	2	5	
Snowfall Days[13]	1	6	4	
Total Evaporation[14] (mm)	M	M	M	
Mean Wind Speed[15] (km/hr)	14.8	15.6	19	
Peak Gust Speed[16]	63	58	108	
Total Bright Sunshine[17] (hr)	247	253	232	
Percent Possible Bright Sunshine[18]	60	61	56	
Total Global Radiation[19] (Langleys)	12081	12921	12400	
Soil Frozen?[22]	NO	NO	NO	
Frozen Levels[23] (cm)	--	--	--	

SUMMARY:

April temperatures for the most part have given us the impression that Spring had arrived early. The first 24 days of the month yielded above normal mean daily temperatures, however, the mean daily temperatures for the last six days plunged to below normal temperatures with overnight minima dipping well below freezing with an extreme of -6.0°C. Fortunately these temperatures are nowhere near the extreme minimum of -28.3°C recorded in 1893 and 1954.

Consequently, the above normal spring temperatures resulted in approximately one-third fewer heating degree days than normal and approximately twice the normal number of growing degree days.

Soil temperatures have increased considerably with all levels being above 0°C. The mean temperature at the 5 cm level was 4.9°C which provides just enough warmth for germination. This would allow farmers to get an early start at cultivating and seeding operations.

The precipitation total of 15.6 mm recorded at the Climate Reference Station was made up of 6.2 cm of snowfall and 9.4 mm of rainfall. The total precipitation received falls below the normal by approximately 27%. The total precipitation of 38.2 mm accumulated to the end of April is still well below the 1951-1980 normal of 88.2 mm by 57%.

SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'N 106°36'W 497 m MSL
MONTHLY WEATHER SUMMARY
MAY, 1984

Table 6.

Element	1984 Value	1983 Value	Normal Value[2] 1951-1980	Extreme All Years[3]
Monthly Mean Temperature[4] (°C)	10.1	8.5	11.2	
Monthly Mean Maximum Temperature[5] (°C)	17.1	15.0	18.1	
Monthly Mean Minimum Temperature[6] (°C)	3.1	2.0	4.3	
Extreme Maximum Temperature[7] (°C)	31.0	27.0	34.0	37.2
Year/Day(s)[20]	1984/30	1983/25		1936/27
Years of Record[21]	1	1	17	87
Extreme Minimum Temperature[7] (°C)	-5.5	-9.0	-10.0	-12.8
Year/Day(s)[20]	1984/7, 11	1983/11		1907/6
Years of Record[21]	1	1	17	87
Days with Frost[8]	11	9	6	
Heating Degree-Days[9] (18°C base)	248	287	216	
Growing Degree-Days[10] (5°C base)	173	145	199	
Total Precipitation[11] (mm)	30.1	53.4	39.6	
Total Rainfall[11] (mm)	29.9	27.2	37.7	
Total Snowfall[12] (cm)	0.2	26.2	1.8	
Greatest 24-hour Precipitation (mm)	17.8	26.4	33.8	51.3
Year/Day(s)[20]	1984/17	1983/10		1909/30
Years of Record[21]	1	1	17	87
Greatest 24-hour Rainfall (mm)	17.8	8.8	33.8	51.3
Year/Day(s)[20]	1984/17	1983/20		1909/30
Years of Record[21]	1	1	17	87
Greatest 24-hour Snowfall (cm)	0.2	26.2	4.3	26.2
Year/Day(s)[20]	1984/7	1983/10		1983/10
Years of Record[21]	1	1	17	87
Precipitation Days[13]	11	14	7	
Rainfall Days[13]	10	14	1	
Snowfall Days[13]	1	1	7	
Total Evaporation[14] (mm)	199	154	210	
Mean Wind Speed[15] (km/hr)	18.3	14.9	19.4	
Peak Gust Speed[16]	86	82	132	
Total Bright Sunshine[17] (hr)	234	282	292	
Percent Possible Bright Sunshine[18]	48	58	60	
Total Global Radiation[19] (Langleys)	13622	15072	15748	
Soil Frozen?[22]	NO	NO	NO	
Frozen Levels[23] (cm)	--	--	--	

SUMMARY:

The mean temperature of 10.1°C was slightly below the 1951-1980 normal of 11.2°C, however, approximately one half of the month witnessed above normal maximum temperatures. Daily temperatures ranged from a maximum of 31.0°C on the 30th to minima of -5.5°C on the 7th and 11th.

The total precipitation of 30.1 mm recorded is below the normal of 39.6 mm. Total precipication consisted of 29.9 mm liquid precipitation and 0.2 mm (water equivalent) of snow. Snowfall recorded this month is below the normal of 1.8 cm and was negligible compared to last year's snowfall of 26.2 cm. The January to May total precipitation of 68.3 mm is still only 54% of the 1951-1980 normal of 127 mm received for the same period.

Drier than normal conditions are evident as winds have created very dusty conditions. Although the monthly mean windspeed of 18.3 km/hr is slightly below the 30 year normal, five days with mean windspeeds in excess of 30 km/hr have been recorded. Wind conditions of this degree create soil drifting problems in agricultural areas where moisture and vegetative cover are lacking.

Slightly below normal temperatures have resulted in slightly below normal evaporation rates (95% of normal). Wind erosion of soil would have been even more severe if evaporation rates were higher.

Total bright sunshine hours recorded at the Climatological Reference Station for the month were only 20% of the normal number of sunshine hours. Total global radiation was also lower (86.5%) than normal. The dust storms likely contributed to the reduction in radiation received.

SASKATCHEWAN RESEARCH COUNCIL

CLIMATE REFERENCE STATION

LOCATION: 52°09'N 106°36'W 497 m MSL

MONTHLY WEATHER SUMMARY

JUNE, 1984

Table 7.

Element	1984 Value	1983 Value	Normal Value[2] 1951-1980	Extreme All Years[3]
Monthly Mean Temperature[4] (°C)	16.1	15.5	15.6	
Monthly Mean Maximum Temperature[5] (°C)	22.3	22.0	22.1	
Monthly Mean Minimum Temperature[6] (°C)	9.8	9.0	9.1	
Extreme Maximum Temperature[7] (°C)	34.0	30.0	35.6	40
Year/Day(s)[20]	1984/30	1983/10		1900/21&1941/24
Years of Record[21]	1	1	17	88
Extreme Minimum Temperature[7] (°C)	1.0	1.0	-3.3	-3.9
Year/Day(s)[20]	1984/3	1983/4		1903/9&1917/2
Years of Record[21]	1	1	17	88
Days with Frost[8]	0	0	0	
Heating Degree-Days[9] (18°C base)	79.5	85.5	89	
Growing Degree-Days[10] (5°C base)	334.5	319.0	319	
Total Precipitation[11] (mm)	52.0	117.2	59.9	
Total Rainfall[11] (mm)	52.0	117.2	59.9	
Total Snowfall[12] (cm)	0	0.0	0.0	
Greatest 24-hour Precipitation (mm)	13.0	99.4	45.0	99.4
Year/Day(s)[20]	1984/6	1983/24		1983/24
Years of Record[21]	1	1	17	88
Greatest 24-hour Rainfall (mm)	13.0	99.4	45.0	99.4
Year/Day(s)[20]	1984/6	1983/24		1983/24
Years of Record[21]	1	1	17	88
Greatest 24-hour Snowfall (cm)	--	0.0	0.0	1.3
Year/Day(s)[20]	--	--	--	1938/29
Years of Record[21]	--	1	17	88
Precipitation Days[13]	9	11	11	
Rainfall Days[13]	9	11	11	
Snowfall Days[13]	0	0	0	
Total Evaporation[14] (mm)	228.2	248	223	
Mean Wind Speed[15] (km/hr)	14.7	15.5	18.2	
Peak Gust Speed[16]	79	91	101	
Total Bright Sunshine[17] (hr)	272.3	279	294	
Percent Possible Bright Sunshine[18]	55	56	59	
Total Global Radiation[19] (Langleys)	15703	15199	16320	
Soil Frozen?[22]	NO	NO	NO	
Frozen Levels[23] (cm)	--	--	--	

SUMMARY:

The monthly mean temperature of 16.1°C exceeded the normal mean temperature by 0.5°C, while the mean maximum and mean minimum temperatures were only slightly above normal. The extreme maximum temperature rose to 34°C on the 30th, while the extreme minimum temperature dipped to 1°C on the 3rd.

The Climate Reference Station recorded 52.0 mm of rainfall, which falls below the 30 year normal by approximately 8 mm. This month's extreme 24 hour rainfall of 13.0 mm is very small in comparison to last year's June 24 record rainfall of 99.4 mm. Total precipitation recorded at CRS from January to the end of June was 120.2 mm. This amount is still well below (only 64%) the 30 year normal of 187.7 mm for the same period.

The total number of sunshine hours recorded at CRS, being 272.3 hours, falls below the normal amount received by approximately 22 hours. Mean windspeeds for the month were slightly below normal.

Total evaporation recorded at CRS of 228 mm was only slightly above the normal of 223 mm.

SASKATCHEWAN RESEARCH COUNCIL

CLIMATE REFERENCE STATION

LOCATION: 52°09'N 106°36'W 497 m MSL

MONTHLY WEATHER SUMMARY

Table 8. JULY, 1984

Element	1984 Value	1983 Value	Normal Value[2] 1951-1980	Extreme All Years[3]
Monthly Mean Temperature[4] (°C)	21.7	19.0	18.4	
Monthly Mean Maximum Temperature[5] (°C)	27.8	24.5	25.2	
Monthly Mean Minimum Temperature[6] (°C)	15.5	13.0	11.6	
Extreme Maximum Temperature[7] (°C)	38.5	30.0	36.7	40.0
Year/Day(s)[20]	1984/27	1983/6,19	--	1919/17,1941/19
Years of Record[21]	1	1	20	88
Extreme Minimum Temperature[7] (°C)	5.5	7.5	1.7	-0.6
Year/Day(s)[20]	1984/5	1983/18	--	1918/25
Years of Record[21]	1	1	20	88
Days with Frost[8]	0	0	0	
Heating Degree-Days[9] (18°C base)	16.0	22.0	32.8	
Growing Degree-Days[10] (5°C base)	459.5	433.0	416.3	
Total Precipitation[11] (mm)	13.0	68.6	56.2	
Total Rainfall[11] (mm)	13.0	68.6	56.2	
Total Snowfall[12] (cm)	0.0	0.0	0.0	
Greatest 24-hour Precipitation (mm)	6.4	18.2	45.5	79.2
Year/Day(s)[20]	1984/21	1983/3	--	1946/3
Years of Record[21]	1	1	20	88
Greatest 24-hour Rainfall (mm)	6.4	18.2	45.5	79.2
Year/Day(s)[20]	1984/21	1983/3	--	1946/3
Years of Record[21]	1	1	20	88
Greatest 24-hour Snowfall (cm)	0.0	0.0	0.0	0.0
Year/Day(s)[20]	--	--	--	--
Years of Record[21]	1	1	20	--
Precipitation Days[13]	4	13	11	
Rainfall Days[13]	4	13	11	
Snowfall Days[13]	0	0	0	
Total Evaporation[14] (mm)	313.3	210.0	229.0	
Mean Wind Speed[15] (km/hr)	14.4	14.2	16.7	
Peak Gust Speed[16]	80	84	105	
Total Bright Sunshine[17] (hr)	380.4	315.0	341.0	
Percent Possible Bright Sunshine[18]	76	63	68	
Total Global Radiation[19] (Langleys)	17178	16350	17608	
Soil Frozen?[22]	NO	NO	NO	
Frozen Levels[23] (cm)	--	--	--	

SUMMARY:

The mean temperature of 21.7°C for July was substantially above the normal temperature of 18.4°C. Temperatures during the first half of July hovered near normal temperatures. With the exception of 3 days during the last half of July, daily mean temperatures were above normal. Daily maximum temperatures during the last week of July have consistently climbed into the thirty's. Daily maximum temperatures of 38°C and 34°C equalled the all time extremes for July 27th and 29th respectively. The extreme maximum temperature for the month of 38°C (on the 26th) fell short of the all time record of 40°C. Although minimum temperatures have dropped to 5°C on two occasions, the remainder of the nightime lows have been warmer than normal.

July has been a very dry month as only one quarter (13.0 mm) of the normal monthly precipitation was recorded. The January to July, 1984 total of 133.3 mm recorded at C.R.S. is approximately one half of the normal received during this period.

The number of sunshine hours recorded at C.R.S. of 380.4 hrs. is approximately 112% of 1951-80 normal. The additional sunshine has contributed to a larger than normal number of growing degree days. C.R.S. has recorded 460 growing degree days which when compared to the 1951-80 normal is approximately 10% greater.

July has been a very warm month with above normal temperatures and below normal precipitation. These low moisture levels and extreme temperatures have been damaging to crops in the maturing stages.

SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'N 106°36'W 497 m MSL
MONTHLY WEATHER SUMMARY
AUGUST, 1984

Table 9.

Element	1984 Value	1983 Value	Normal Value[2] 1951-1980	Extreme All Years[3]
Monthly Mean Temperature[4] (°C)	20.3	20.0	17.2	
Monthly Mean Maximum Temperature[5] (°C)	28.2	28.4	24.2	
Monthly Mean Minimum Temperature[6] (°C)	12.3	11.6	10.2	
Extreme Maximum Temperature[7] (°C)	37.0	36.5	36.7	37.8
Year/Day(s)[20]	1984/10	1983/6		1893/6, 1949/6
Years of Record[21]	1	1	20	87
Extreme Minimum Temperature[7] (°C)	-0.5	6.0	-2.8	-2.8
Year/Day(s)[20]	1984/31	1983/19		1976/28
Years of Record[21]	1	1	20	87
Days with Frost[8]	1	0	0	
Heating Degree-Days[9] (18°C base)	31.0	14.0	60.1	
Growing Degree-Days[10] (5°C base)	479.5	468.5	378.7	
Total Precipitation[11] (mm)	9.6	30.0	35.1	
Total Rainfall[11] (mm)	9.6	30.0	35.1	
Total Snowfall[12] (cm)	0.0	0.0	0.0	
Greatest 24-hour Precipitation (mm)	5.4	8.6	24.6	73.7
Year/Day(s)[20]	1984/3	1983/16		1945/3
Years of Record[21]	1	1	20	87
Greatest 24-hour Rainfall (mm)	5.4	8.6	24.6	73.7
Year/Day(s)[20]	1984/3	1983/16		1945/3
Years of Record[21]	1	1	20	87
Greatest 24-hour Snowfall (cm)	0.0	0.0	0.0	0.0
Year/Day(s)[20]	--	--	--	--
Years of Record[21]	1	1	20	
Precipitation Days[13]	6	7	10	
Rainfall Days[13]	6	7	10	
Snowfall Days[13]	0	0	0	
Total Evaporation[14] (mm)	276.7	232.1	206.0	
Mean Wind Speed[15] (km/hr)	13.9	11.1	16.5	
Peak Gust Speed[16]	87	80	151	
Total Bright Sunshine[17] (hr)	334.7	340.0	293.0	
Percent Possible Bright Sunshine[18]	74	76	65	
Total Global Radiation[19] (Langleys)	13942	14104	14445	
Soil Frozen?[22]	NO	NO	NO	
Frozen Levels[23] (cm)	--	--	--	

SUMMARY:

August temperatures have been above normal for 22 of 27 days this month. The mean temperature of 20.3°C is 3.1° above the 1951-1980 normal. The extreme maximum temperature of 37°C recorded on the 10th surpassed the record for that day by 2°C. The extreme maximum temperature on record for the 18th was also surpassed.

The monthly total precipitation (9.6 mm) is only 27% of the normal precipitation. Approximately one half of the recorded amount fell on August 3rd. The total precipitation recorded this year (January to August) of 117.4 mm is 161.6 mm below the normal precipitation received for the same period.

Sunshine hours for the month (334.7) have surpassed the August normal by approximately 14%. However, the total evaporation measured (276.7 mm) is above the 1951-1980 normal by approximately 34%.

August, 1984 has been the warmest August on record. Also August has not had as low precipitation amounts since 1976. The high temperatures and low precipitation have taken their toll on crops in this area.

SASKATCHEWAN RESEARCH COUNCIL

CLIMATE REFERENCE STATION

LOCATION: 52°09'N 106°36'W 497 m MSL

MONTHLY WEATHER SUMMARY

Table 10. SEPTEMBER, 1984

Element	1984 Value	1983 Value	Normal Value[2] 1951-1980	Extreme All Years[3]
Monthly Mean Temperature[4] (°C)	8.3	10.0	11.5	
Monthly Mean Maximum Temperature[5] (°C)	14.3	15.9	17.8	
Monthly Mean Minimum Temperature[6] (°C)	2.3	4.0	5.1	
Extreme Maximum Temperature[7] (°C)	31.0	34.0	35.6	35.6
Year/Day(s)[20]	1984/5	1983/1		1978/4
Years of Record[21]	1	1	16	85
Extreme Minimum Temperature[7] (°C)	-6.5	-7.0	-7.8	-11.1
Year/Day(s)[20]	1984/28	1983/29	--	1908/28
Years of Record[21]	1	1	16	85
Days with Frost[8]	11	9	4	
Heating Degree-Days[9] (18°C base)	289.5	246.5	201.3	
Growing Degree-Days[10] (5°C base)	128.5	169.0	200.8	
Total Precipitation[11] (mm)	56.9	62.2	32.2	
Total Rainfall[11] (mm)	48.0	62.2	30.8	
Total Snowfall[12] (cm)	8.9	0.0	1.3	
Greatest 24-hour Precipitation (mm)	25.3	20.0	29.6	44.2
Year/Day(s)[20]	1984/21	1983/9	--	1931/12
Years of Record[21]	1	1	16	85
Greatest 24-hour Rainfall (mm)	18.6	20.0	29.6	44.2
Year/Day(s)[20]	1984/21	1983/9	--	1931/12
Years of Record[21]	1	1	16	85
Greatest 24-hour Snowfall (cm)	6.7	0.0	5.6	17.6
Year/Day(s)[20]	1984/21	--	--	1982/28
Years of Record[21]	1	--	16	85
Precipitation Days[13]	10	11	9	
Rainfall Days[13]	9	11	9	
Snowfall Days[13]	3	0	1	
Total Evaporation[14] (mm)	101.0	114.5	125.0	
Mean Wind Speed[15] (km/hr)	13.2	15.2	18.1	
Peak Gust Speed[16]	80.0	87.0	148.0	
Total Bright Sunshine[17] (hr)	151.5	178.2	191.0	
Percent Possible Bright Sunshine[18]	40	47	50	
Total Global Radiation[19] (Langleys)	7676	8622	9780	
Soil Frozen?[22]	NO	NO	NO	
Frozen Levels[23] (cm)	--	--	--	

SUMMARY:

September has been cooler than normal with below normal daily temperatures on 24 of 30 days. The mean temperature of 8.3°C is 3.2°C below the 1951-1980 normal mean. The extreme temperatures range from a maximum of 31.0°C on the 5th to a low of -6.5°C on the 28th.

The total precipitation recorded at CRS (56.9 mm) is approximately 76% greater than the normal received. Saskatoon received an early taste of winter as approximately 15% (8.9 mm) of the total fell as a blanket of wet snow on the 21st, 22nd and 25th. Although the monthly total precipitation exceeded the monthly normal, the January-September total precipitation of 199.8 mm is still well below the 1951-1980 January-September normal of 311.2 mm by 111.4 mm.

Total bright sunshine and global radiation values for the month are both below normal by 25% and 27% respectively. The total number of heating degree days has increased by 44% as compared to the normal 1951-1980 value. The total number of days with frost recorded at CRS was 11 which is slightly more than twice the normal value.

September has been a cooler and wetter than normal month. The above normal precipitation was a welcome change to the dry summer months.

SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'N 106°36'W 497 m MSL
MONTHLY WEATHER SUMMARY
OCTOBER, 1984

Table 11.

Element	1984 Value	1983 Value	Normal Value[2] 1951-1980	Extreme All Years[3]
Monthly Mean Temperature[4] (°C)	3.1	5.3	5.2	
Monthly Mean Maximum Temperature[5] (°C)	7.6	11.9	11.1	
Monthly Mean Minimum Temperature[6] (°C)	-1.4	-1.4	-0.8	
Extreme Maximum Temperature[7] (°C)	28.5	20.0	28.3	32.2
Year/Day(s)[20]	1984/8	1983/20	--	1943/5
Years of Record[21]	1	1	17	85
Extreme Minimum Temperature[7] (°C)	-19.5	-9.0	-18.3	-25.6
Year/Day(s)[20]	1984/30, 31	1983/17	--	1919/26
Years of Record[21]	1	1	17	85
Days with Frost[8]	18	21	18	
Heating Degree-Days[9] (18°C base)	443.0	394.5	398.0	
Growing Degree-Days[10] (5°C base)	109.0	43.5	71.1	
Total Precipitation[11] (mm)	60.9	6.4	17.5	
Total Rainfall[11] (mm)	5.1	6.4	7.7	
Total Snowfall[12] (cm)	55.8	T	10.3	
Greatest 24-hour Precipitation (mm)	36.7	3.8	25.4	36.7
Year/Day(s)[20]	1984/16	1983/4	--	1984/16
Years of Record[21]	1	1	17	85
Greatest 24-hour Rainfall (mm)	4.5	3.8	23.1	34.0
Year/Day(s)[20]	1984/25	1983/4	--	1914/5
Years of Record[21]	1	1	17	85
Greatest 24-hour Snowfall (cm)	36.7	T	22.9	36.7
Year/Day(s)[20]	1984/16	1983/15	--	1984/16
Years of Record[21]	1	1	17	85
Precipitation Days[13]	11	6	5	
Rainfall Days[13]	3	6	3	
Snowfall Days[13]	8	--	3	
Total Evaporation[14] (mm)	60.7*	--	--	
Mean Wind Speed[15] (km/hr)	17.9	12.3	18.0	
Peak Gust Speed[16]	69.0	59	138	
Total Bright Sunshine[17] (hr)	131.7	178.0	175.0	
Percent Possible Bright Sunshine[18]	40	54	53	
Total Global Radiation[19] (Langleys)	5971	6009	6107	
Soil Frozen?[22]	YES	NO	NO	
Frozen Levels[23] (cm)	5,10	--	--	

*EVAP. PROGRAM DISCONTINUED OCTOBER 15, 1984

SUMMARY:

October can be best remembered for the below normal temperatures and above normal snowfall.

The mean temperature of 3.1°C is lower than the normal mean temperature (5.2°C) by 2.1°C. Extreme temperatures observed at the Climate Reference Station reached a maximum of 28.5°C on the 8th to a minimum of -19.5°C on the 30th and 31st. The first fifteen days of the month attained above normal temperatures, however on the 16th day, we received a record 36.7 cm (liquid equivalent) of snowfall, and temperatures fell below normal for the remainder of the month. Seventeen consecutive days with below normal temperatures is the longest cool spell to date for 1984.

The total precipitation of 60.9 mm exceeds the 1951-1980 normal (17.5 mm) by 43.4 mm (248% of normal) and is the second largest total for October on record since 1941. The total snowfall amount (55.8 cm) is approximately 5½ times the normal received for October, and has surpassed the largest amount on record since 1941 by 11.4 cm (October, 1969 - 44.4 cm). The total amount of precipitation recorded to the end of October is 260.7 mm is still below the 1951-1980 normal (328.7 mm) by 68 mm (i.e. 79.3% of normal).

The colder than normal temperatures in the latter half of the month contributed to an increase in heating degree days by approximately 11%.

The total number of bright sunshine hours (131.7 hours) is 26% lower than the 1951-1980 normal. On 10 of 31 days less than 2.0 hours of bright sunshine were recorded, and 7 of the 10 days without sunshine were consecutive!

Record setting snowfall amounts, and cooler than normal temperatures have ungraciously confronted us with a much earlier than expected winter.

SASKATCHEWAN RESEARCH COUNCIL

CLIMATE REFERENCE STATION

LOCATION: 52°09'N 106°36'W 497 m MSL

MONTHLY WEATHER SUMMARY

Table 12. NOVEMBER, 1984

Element	1984 Value	1983 Value	Normal Value[2] 1951-1980	Extreme All Years[3]
Monthly Mean Temperature[4] (°C)	-8.6	-2.9	-5.5	
Monthly Mean Maximum Temperature[5] (°C)	-5.0	-0.2	-1.0	
Monthly Mean Minimum Temperature[6] (°C)	-12.2	-5.6	-10.0	
Extreme Maximum Temperature[7] (°C)	5.0	15.0	19.4	21.7
Year/Day(s)[20]	1984/23	1983/4	--	1903/3
Years of Record[21]	1	1	18	86
Extreme Minimum Temperature[7] (°C)	-24.0	-18.5	-32.8	-39.4
Year/Day(s)[20]	1984/1	1983/25	--	1893/30
Years of Record[21]	1	1	18	86
Days with Frost[8]	30	25	29	
Heating Degree-Days[9] (18°C base)	810.0	627.5	704.4	
Growing Degree-Days[10] (5°C base)	0.0	7.5	2.6	
Total Precipitation[11] (mm)	19.2	27.6	16.0	
Total Rainfall[11] (mm)	0.0	4.8	2.5	
Total Snowfall[12] (cm)	19.2	22.8	12.3	
Greatest 24-hour Precipitation (mm)	8.3	6.4	19.3	27.9
Year/Day(s)[20]	1984/30	1983/27	--	1938/1
Years of Record[21]	1	1	18	86
Greatest 24-hour Rainfall (mm)	0.0	2.6	14.5	14.5
Year/Day(s)[20]	--	1983/7	--	1978/4
Years of Record[21]	1	1	18	86
Greatest 24-hour Snowfall (cm)	8.3	6.4	13.2	27.9
Year/Day(s)[20]	1984/30	1983/27	--	1938/1
Years of Record[21]	1	1	18	86
Precipitation Days[13]	8	15	9	
Rainfall Days[13]	0	4	1	
Snowfall Days[13]	8	11	8	
Total Evaporation[14] (mm)	--	--	--	
Mean Wind Speed[15] (km/hr)	14.7	12.9	16.9	
Peak Gust Speed[16]	60	55	100	
Total Bright Sunshine[17] (hr)	86.5	48.6	109.0	
Percent Possible Bright Sunshine[18]	33	18	41	
Total Global Radiation[19] (Langleys)	3322	2353	3090	
Soil Frozen?[22]	YES	YES	YES	
Frozen Levels[23] (cm)	5,10,20	5	5,10,20	

SUMMARY:

The mean daily temperature of -8.6°C is lower than the 1951-1980 normal (-5.5°C) by 3.1°C. November 11 marks the 28th consecutive day with below normal temperatures (longest cool spell to date this year). The extreme minimum temperature of -24.0°C recorded on the 1st was lower than the record for that day set in 1911. The extreme maximum for the month of 5.0°C was recorded on the 23rd during a short lived mild spell.

The total precipitation (19.2 mm) for the month fell as snow, with 8.3 cm, the largest amount falling on the 30th. The total monthly precipitation is slightly above the 1951-1980 normal by 3.2 mm. No rainfall was recorded. Total precipitation for the year recorded to the end of the month of 279.9 mm is only 81% of the 1951-1980 normal for the same period. This is due to the effect of the past dry summer keeping the annual total low.

The total number of bright sunshine hours (86.5 hrs.) recorded at the Climate Reference Station is only 33% of the total possible sunshine we could receive, given clear conditions, and approximately 8% less than the normal.

Colder than normal temperatures and slightly above normal snowfall move us closer to the depths of winter.

SASKATCHEWAN RESEARCH COUNCIL
CLIMATE REFERENCE STATION
LOCATION: 52°09'N 106°36'W 497 m MSL
MONTHLY WEATHER SUMMARY
DECEMBER, 1984

Table 13.

Element	1984 Value	1983 Value	Normal Value[2] 1951-1980	Extreme All Years[3]
Monthly Mean Temperature[4] (°C)	-19.5	-22.8	-13.9	
Monthly Mean Maximum Temperature[5] (°C)	-14.5	-18.0	-9.3	
Monthly Mean Minimum Temperature[6] (°C)	-24.4	-27.5	-18.5	
Extreme Maximum Temperature[7] (°C)	2.5	-6.5	8.0	13.3
Year/Day(s)[20]	1984/7	1983/31	--	1939/5
Years of Record[21]	1	1	18	86
Extreme Minimum Temperature[7] (°C)	-38.0	-39.5	-44.4	-43.9
Year/Day(s)[20]	1984/29	1983/23	--	1892/22
Years of Record[21]	1	1	18	86
Days with Frost[8]	31	31	31	
Heating Degree-Days[9] (18°C base)	1158.0	1264.0	992.0	
Growing Degree-Days[10] (5°C base)	0.0	0.0	0.0	
Total Precipitation[11] (mm)	17.6	8.1	25.8	
Total Rainfall[11] (mm)	0.0	0.0	0.8	
Total Snowfall[12] (cm)	17.6	8.1	23.1	
Greatest 24-hour Precipitation (mm)	6.0	4.4	14.5	20.6
Year/Day(s)[20]	1984/26	1983/10	--	1936/24
Years of Record[21]	1	1	18	86
Greatest 24-hour Rainfall (mm)	0.0	0.0	4.3	4.8
Year/Day(s)[20]	--	--	--	1956/26
Years of Record[21]	1	1	18	86
Greatest 24-hour Snowfall (cm)	6.0	4.4	14.5	20.6
Year/Day(s)[20]	1984/26	1983/10	--	1936/24
Years of Record[21]	1	1	18	86
Precipitation Days[13]	8	9	13	
Rainfall Days[13]	0	0	1	
Snowfall Days[13]	8	9	12	
Total Evaporation[14] (mm)	M	M	(May-October only)	
Mean Wind Speed[15] (km/hr)	14.1	12.0	16.8	
Peak Gust Speed[16]	62	50	97	
Total Bright Sunshine[17] (hr)	82.3	76.8	86.0	
Percent Possible Bright Sunshine[18]	34	32	36	
Total Global Radiation[19] (Langleys)	2714	2541	2294	
Soil Frozen?[22]	YES	YES	YES	
Frozen Levels[23] (cm)	5,10,20,50,100	5,10,20,50	5,10,20,50	

SUMMARY:

The monthly mean temperature of -19.5°C recorded at CRS reminds everyone that December was indeed a cold month. Although it was not as cold as December of 1983 (-22.8°C), the monthly mean was 4.6°C lower than normal. The nine days with above normal temperatures are not as easily remembered as compared to the 22 days with below normal temperatures. Extreme temperatures of 2.5°C on the 7th, and -38.0°C on the 29th were recorded. Saskatoon was subjected to below -30.0°C for the last eleven days of December, limiting outdoor activity during the Christmas holidays.

The total precipitation of 17.6 mm recorded at CRS fell as snow, with the largest 24 hour amount of 6.0 mm falling on Boxing Day. The monthly precipitation falls below the normal of 25.8 mm by 8.2 mm. The total annual precipitation of 297.5 mm is 73 mm less than the normal of 370.5 mm.

The total bright sunshine hours recorded at CRS (82.3 hours) fell slightly below the normal of 86.0 hours. Temperatures were colder than normal for most of the month so the number of heating degree days (1158) surpassed the normal of 992 by 166 degree days.

Below freezing soil temperatures have now penetrated to the 100 cm depth.

December, 1984 temperatures were unkind as they dipped to below -30.0°C during the holiday season which is a sharp contrast to December, 1983 when temperatures rose to above normal during the holiday season.

Table 14. Soil Temperature and Snow Cover at Saskatoon SRC, January 1984.

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days	Date	Snow Depth (cm)
5	-8.4	14.0	31	1	7
10	-7.9	14.5	31	5	2
20	-6.8	12.5	31	10	1
50	-4.1	5.5	31	15	3
100	-0.2	2.0	18	20	3
150	1.7	2.0	0	25	5
300	4.9	2.0	0	31	1

Table 15. Soil Temperature and Snow Cover at Saskatoon SRC, February 1984.

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days	Date	Snow Depth (cm)
5	-3.2	10.5	29	1	1
10	-2.9	10.0	29	5	1
20	-2.4	8.5	29	10	2
50	-1.7	3.0	29	15	1
100	-0.5	1.0	29	20	1
150	0.5	0.0	0	25	0
300	3.5	1.0	0	29	0

Table 16. Soil Temperature and Snow Cover at Saskatoon SRC, March 1984.

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days	Date	Snow Depth (cm)
5	-2.6	13.0	29	1	0
10	-2.3	12.5	25	5	T
20	-2.0	8.5	26	10	1
50	-1.2	3.0	31	15	1
100	-0.1	0.5	31	20	1
150	0.6	0.5	0	25	2
300	2.9	0.5	0	31	0

Table 17. Soil Temperature and Snow Cover at Saskatoon SRC, April 1984.

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days	Date	Snow Depth (cm)
5	6.6	12.5	0	1	0
10	7.0	12.0	0	5	0
20	6.3	10.5	0	10	0
50	4.4	8.0	4	15	0
100	2.4	5.0	9	20	0
150	1.9	3.5	0	25	0
300	2.6	0.5	0	30	0

Table 18. Soil Temperature and Snow Cover at Saskatoon SRC, May 1984.

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days	Date	Snow Depth (cm)
5	10.7	14.5	0	1	0
10	11.0	13.0	0	5	0
20	10.3	9.5	0	10	0
50	8.4	5.0	0	15	0
100	6.1	3.0	0	20	0
150	4.9	2.0	0	25	0
300	3.7	2.0	0	31	0

Table 19. Soil Temperature and Snow Cover at Saskatoon SRC, June 1984.

Depth (cm)	Mean Temp. (°C)	Range (°C)	Frost Days	Date	Snow Depth (cm)
5	17.2	14.5	0	1	0
10	17.3	14.0	0	5	0
20	16.3	10.0	0	10	0
50	13.5	5.5	0	15	0
100	9.8	3.5	0	20	0
150	7.6	3.0	0	25	0
300	5.3	1.5	0	30	0

Table 20. Soil Temperature and Snow Cover at Saskatoon SRC, July 1984.

Depth (cm)	Mean Temp. (^{o}C)	Range (^{o}C)	Frost Days	Date	Snow Depth (cm)
5	21.4	12.0	0	1	0
10	21.1	11.0	0	5	0
20	20.4	6.5	0	10	0
50	17.3	4.0	0	15	0
100	12.9	2.5	0	20	0
150	10.5	4.0	0	25	0
300	7.3	1.5	0	31	0

Table 21. Soil Temperature and Snow Cover at Saskatoon SRC, August 1984.

Depth (cm)	Mean Temp. (^{o}C)	Range (^{o}C)	Frost Days	Date	Snow Depth (cm)
5	21.3	13.0	1	1	0
10	21.1	12.0	1	5	0
20	20.8	7.0	1	10	0
50	18.6	2.5	1	15	0
100	14.8	0.5	1	20	0
150	12.5	1.0	1	25	0
300	8.9	1.5	1	31	0

Table 22. Soil Temperature and Snow Cover at Saskatoon SRC, September 1984.

Depth (cm)	Mean Temp. (^{o}C)	Range (^{o}C)	Frost Days	Date	Snow Depth (cm)
5	10.2	16.0	0	1	0
10	10.5	15.0	0	5	0
20	11.1	12.0	0	10	0
50	12.5	8.5	0	15	0
100	12.6	5.0	0	20	0
150	11.9	2.5	0	25	0
300	10.1	0.5	0	30	0

Table 23. Soil Temperature and Snow Cover at Saskatoon SRC, October 1984.

Depth (cm)	Mean Temp. (^{o}C)	Range (^{o}C)	Frost Days	Date	Snow Depth (cm)
5	5.6	14.0	3	1	0
10	6.1	13.5	1	5	0
20	6.6	11.5	0	10	0
50	7.7	7.0	0	15	0
100	8.9	4.0	0	20	5
150	9.2	2.0	0	25	3
300	9.3	1.0	0	31	6

Table 24. Soil Temperature and Snow Cover at Saskatoon SRC, November 1984.

Depth (cm)	Mean Temp. (^{o}C)	Range (^{o}C)	Frost Days	Date	Snow Depth (cm)
5	-1.3	4.0	30	1	5
10	-0.6	4.0	29	5	5
20	0.1	5.0	27	10	5
50	2.3	3.5	0	15	5
100	4.9	3.0	0	20	4
150	6.3	3.0	0	25	3
300	8.0	2.0	0	30	5

Table 25. Soil Temperature and Snow Cover at Saskatoon SRC, December 1984.

Depth (cm)	Mean Temp. (^{o}C)	Range (^{o}C)	Frost Days	Date	Snow Depth (cm)
5	-8.2	12.5	31	1	11
10	-7.7	13.0	31	5	10
20	-6.6	13.0	31	10	12
50	-3.2	8.5	26	15	10
100	1.7	4.5	7	20	10
150	3.6	3.5	0	25	10
300	6.4	2.0	0	31	15

Table 26. Diffuse Solar Radiation (Langleys/Day) at Saskatoon SRC, 1984.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	34.1	74.7	97.3	190.4	197.0	211.6	261.8	190.3	195.2	72.0	46.0	67.6
2	46.3	61.2	113.5	123.2	174.6	157.8	150.2	200.6	107.9	39.4	76.6	49.8
3	32.6	85.6	115.6	195.9	222.1	174.2	155.4	147.5	153.4	143.8	96.6	104.5
4	48.1	61.2	128.0	113.4	153.9	224.6	198.5	123.2	86.3	72.0	90.7	83.4
5	44.6	56.0	144.8	184.6	201.5	216.7	175.0	171.3	107.2	69.2	74.7	91.1
6	51.0	90.0	165.4	135.9	250.0	110.7	158.6	176.5	123.4	62.7	87.0	57.2
7	31.9	55.5	90.7	134.8	244.5	171.1	107.2	113.4	86.7	48.1	92.2	67.6
8	54.7	87.0	92.6	125.2	138.9	174.2	134.2	154.8	89.5	35.7	81.1	32.9
9	40.8	65.7	104.6	130.9	241.9	265.0	130.5	158.8	126.2	37.4	80.9	50.6
10	44.8	85.5	85.7	154.1	227.6	131.3	135.5	134.9	193.5	46.9	40.8	48.9
11	64.6	87.2	163.2	135.9	168.9	190.8	169.8	156.1	135.8	72.3	46.7	25.4
12	40.3	58.6	119.0	124.1	197.6	157.5	185.3	74.8	58.8	76.1	72.9	55.0
13	48.5	52.2	170.3	213.6	139.3	117.6	230.9	158.1	156.9	40.7	58.6	35.8
14	55.0	88.2	165.3	81.2	220.7	229.3	141.3	179.5	72.7	95.3	65.4	60.8
15	58.7	78.0	103.1	77.1	167.8	130.2	170.3	153.6	47.3	73.9	36.0	34.5
16	58.4	95.5	161.8	73.5	181.0	251.8	195.5	70.7	54.4	56.9	67.4	45.3
17	49.2	71.4	141.8	110.7	109.8	176.9	73.6	78.0	66.7	122.7	67.7	33.9
18	73.3	60.6	129.8	191.7	241.7	117.9	85.1	72.8	76.7	131.8	63.8	48.5
19	60.1	106.8	150.2	82.5	222.2	156.2	106.5	125.4	55.3	102.8	66.1	31.5
20	72.8	114.1	92.6	104.4	204.0	79.1	96.3	135.4	115.2	89.3	66.6	52.8
21	78.7	80.5	163.0	92.8	210.5	139.7	151.7	166.0	30.4	96.9	55.0	35.6
22	81.4	91.9	99.4	161.0	201.8	218.4	93.1	66.5	148.1	85.0	44.1	53.4
23	71.7	73.6	156.8	147.2	167.7	147.3	130.7	149.7	140.5	92.1	45.8	40.8
24	55.1	69.7	90.9	175.2	226.2	202.3	115.7	92.8	151.0	71.3	37.6	58.3
25	70.3	153.2	122.8	138.7	232.6	256.9	84.2	92.9	94.8	87.1	55.0	40.3
26	73.9	106.9	96.9	182.3	134.9	149.5	75.5	180.9	109.5	84.5	73.7	50.6
27	56.2	74.9	113.0	131.8	232.2	205.8	104.4	95.3	62.8	111.0	72.3	52.9
28	63.6	80.2	163.7	100.9	180.6	121.6	185.1	115.6	47.9	100.2	30.8	52.7
29	55.6	75.5	167.3	181.7	128.0	88.1	178.2	185.3	64.5	49.4	91.0	50.5
30	50.7		129.8	216.3	224.9	142.7	138.1	99.7	40.3	102.3	45.1	39.3
31	52.2		170.5		223.2		220.7	74.7		121.9		43.5
Total Diffuse	1719.2	2341.4	4009.4	4211.0	1356.4	5116.8	2762.2	2367.7	2998.9	2490.7	1928.2	1595.0
Total Global	2094	5018	7187	12081	13622	15703	17178	13942	7676	5971	3322	2714

Table 27. Some Significant Climatic Events, 1984.

FROST FREE SEASON

	Last Spring Frost	First Fall Frost	Length of Season
1984	May 24	August 31	96 days
1983	May 24	September 13	111 days

SNOW SEASON

Greatest Depth of Snow on Ground (cm)

	Jan.	Feb.	Mar.	Apr.	May	Oct.	Nov.	Dec.
1984	7	2	2	1	0	6	5	15
1983	24	25	35	20	22	0	9	8

	Cessation[1] of Snow Pack	Last Spring Snowfall	First Fall Snow	Onset[2] of Snow Pack
1984	February 21	May 6	September 21	October 16
1983	April 16	May 10	November 10	November 19

WEATHER "SPELLS"[3,4]

	1984	1983
Longest Cool Spell:	28 days, Oct. 15-Nov. 11	26 days, Nov. 28-Dec. 24
Longest Warm Spell:	45 days, Jan. 22-Mar. 6	34 days, Feb. 9-Mar. 15
Longest Dry Spell:	33 days, Jan. 27-Feb. 28	16 days, Sept. 18-Oct. 3
Longest Wet Spell:	4 days, May 21-24 and June 6-9	9 days, Feb. 27-Mar. 7

1. First day on the first interval of at least 5 days duration in which snow cover is reduced to less than 1 cm depth.

2. First day of the first interval of at least 5 days duration in which snow cover equals or exceeds 1 cm depth.

3. Temperature "spells" are defined as a sequence of days when the daily mean temperature during the year in question is higher (warm spell) or lower (cold spell) than the long-term daily mean for the date in question.

4. Precipitation "spells" are defined as the sequence of days with precipitation amounts greater than trace (wet spells) or precipitation amounts of trace or less (dry spells).

Table 28. Mean Hourly Wind Speed (km/hr) for 16 Compass Points, 1984.

Direction	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
N	16.3	19.3	17.8	17.1	12.9	11.1	15.9	14.1	13.8	17.9	13.9	20.8	16.2
NNE	11.7	14.4	13.8	18.4	14.3	14.9	14.1	11.6	17.2	16.2	14.6	15.3	15.1
NE	17.7	9.7	9.4	12.0	13.1	14.3	14.7	9.0	20.4	19.3	14.7	12.5	14.2
ENE	12.4	7.2	15.8	11.3	11.9	18.8	12.7	6.8	18.3	18.2	13.2	6.8	13.3
E	13.0	10.8	7.7	8.4	15.8	16.3	15.6	10.3	19.7	17.3	13.2	11.9	13.2
ESE	13.7	10.5	9.4	12.5	21.5	15.0	14.5	8.5	13.6	14.5	16.8	15.4	14.3
SE	13.2	16.0	14.6	15.9	22.8	13.6	15.8	12.1	13.3	19.4	21.1	17.0	16.4
SSE	10.0	15.8	13.5	17.7	17.3	15.7	15.2	12.2	14.4	19.7	18.4	15.4	15.7
S	9.9	15.0	13.9	14.7	16.2	13.2	13.9	14.4	12.5	18.3	9.8	16.9	14.4
SSW	12.4	11.2	8.5	15.4	12.0	13.8	10.7	13.9	9.1	16.6	14.0	13.5	12.7
SW	15.1	12.8	14.8	15.1	17.6	18.9	11.4	12.0	10.8	15.1	15.5	13.6	14.3
WSW	13.5	12.4	15.8	7.6	14.4	16.6	9.5	11.9	11.2	14.3	11.0	14.8	12.9
W	17.2	10.7	9.8	13.1	21.8	18.0	13.7	18.1	11.9	13.6	10.9	12.6	14.6
WNW	16.9	16.0	12.8	13.3	25.5	20.3	16.1	20.2	12.8	17.7	12.4	11.8	16.7
NW	17.3	16.9	13.5	14.5	18.4	15.7	17.3	22.2	14.6	19.4	11.8	14.6	16.6
NNW	13.6	15.3	14.4	16.6	16.7	11.3	13.2	14.9	11.4	18.7	11.9	18.2	15.1
ALL	14.3	13.5	12.8	15.0	18.2	15.4	14.5	14.1	13.4	17.6	14.6	14.4	14.8

NOTE: Anemometer height is 10 m. Time is from midnight to midnight local time.

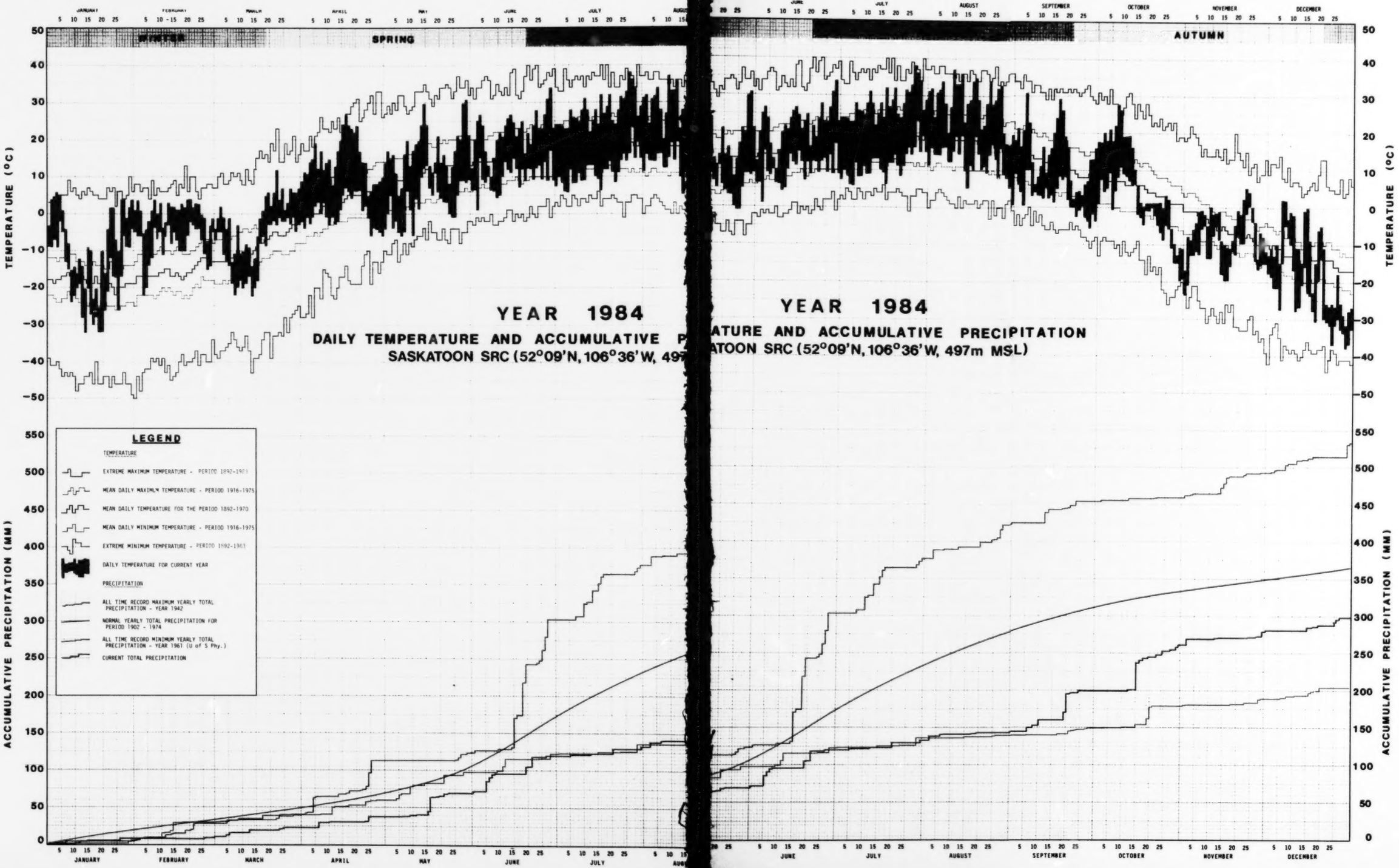
Table 29. Percentage Frequency of Winds from 16 Compass Points, 1984.

Direction	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
N	3.8	1.9	5.2	4.7	2.6	4.8	5.0	3.8	4.2	5.2	3.3	6.8	4.3
NNE	4.2	2.9	6.6	11.6	7.1	5.3	6.1	4.7	7.6	3.8	7.5	11.1	6.5
NE	3.0	2.6	4.6	3.6	4.2	4.4	5.2	4.2	5.2	5.2	6.0	4.4	4.4
ENE	0.9	2.0	4.0	4.6	3.1	3.6	3.0	2.6	2.5	3.0	3.6	1.4	2.8
E	3.6	3.3	3.5	2.4	2.4	2.8	3.9	2.6	3.0	1.5	2.5	1.1	2.7
ESE	2.6	4.6	9.1	5.4	9.4	6.5	6.5	4.4	7.2	4.2	10.7	1.3	6.0
SE	5.4	9.6	20.4	15.0	15.3	10.7	9.2	14.4	9.2	9.3	12.2	3.5	11.2
SSE	3.5	9.5	11.3	14.3	7.8	7.2	4.4	7.0	7.2	7.4	4.7	4.2	7.4
S	5.0	6.6	5.6	9.7	5.2	5.6	3.0	7.0	6.9	8.3	3.6	3.9	5.9
SSW	14.4	16.8	5.1	10.2	6.5	5.8	5.6	8.2	10.4	7.8	9.2	15.6	9.6
SW	9.1	7.5	2.4	1.7	4.4	3.9	2.8	5.6	4.5	3.6	5.7	10.3	5.1
WSW	7.8	6.6	1.5	1.4	4.4	3.0	5.5	4.7	6.6	5.5	4.3	9.3	5.1
W	8.6	5.9	2.4	2.2	5.2	4.0	7.7	5.8	5.8	6.3	4.3	6.0	5.4
WNW	13.0	12.2	5.4	3.9	11.0	9.8	17.5	11.8	7.9	12.4	10.8	11.4	10.6
NW	9.3	5.6	5.4	2.8	7.1	18.8	10.9	7.7	6.9	9.4	8.5	4.9	8.0
NNW	4.8	1.4	5.2	4.7	2.4	2.6	3.2	5.1	3.3	7.0	2.9	4.0	3.9
CALM	1.1	1.0	2.2	1.7	1.7	1.2	0.6	0.5	1.4	0.1	0.1	1.0	1.1

NOTE: Anemometer height is 10 m. Time is from midnight to midnight local time.

Figure 1. Year 1984 Daily Temperature and Cumulative Precipitation.

In order to present the maximum length of climatic record for the Saskatoon area, data from several sources have been pooled to produce the historic record shown in this Figure. For data sources please refer to Footnotes for Climatic Tables, note 3. The seasons shown are defined on an astronomical basis.


WINTER
SPRING
AUTUMN
TEMPERATURE (°C)
ACCUMULATIVE PRECIPITATION (MM)
YEAR 1984
DAILY TEMPERATURE AND ACCUMULATIVE P
SASKATOON SRC (52°09'N, 106°36'W, 497
ATURE AND ACCUMULATIVE PRECIPITATION
ATOON SRC (52°09'N, 106°36'W, 497m MSL)
LEGEND
TEMPERATURE
EXTREME MAXIMUM TEMPERATURE - PERIOD 1892-1983
MEAN DAILY MAXIMUM TEMPERATURE - PERIOD 1916-1975
MEAN DAILY TEMPERATURE FOR THE PERIOD 1892-1970
MEAN DAILY MINIMUM TEMPERATURE - PERIOD 1916-1975
EXTREME MINIMUM TEMPERATURE - PERIOD 1892-1983
DAILY TEMPERATURE FOR CURRENT YEAR
PRECIPITATION
ALL TIME RECORD MAXIMUM YEARLY TOTAL PRECIPITATION - YEAR 1942
NORMAL YEARLY TOTAL PRECIPITATION FOR PERIOD 1902 - 1974
ALL TIME RECORD MINIMUM YEARLY TOTAL PRECIPITATION - YEAR 1961 (U of S Phy.)
CURRENT TOTAL PRECIPITATION
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER